

Title (en)

GRAIN-ORIENTED ELECTRICAL STEEL SHEET AND IRON CORE USING SAME

Title (de)

KORNORIENTIERTES ELEKTROSTAHLBLECH UND EISENKERN DAMIT

Title (fr)

TÔLE D'ACIER ÉLECTRIQUE À GRAINS ORIENTÉS ET NOYAU DE FER METTANT EN OUVRE UNE TELLE TÔLE D'ACIER

Publication

EP 3919636 A4 20220323 (EN)

Application

EP 20748720 A 20200130

Priority

- JP 2019016394 A 20190131
- JP 2020003533 W 20200130

Abstract (en)

[origin: EP3919636A1] Provided are a grain-oriented electrical steel sheet having excellent iron loss property without using magnetic domain refining treatment and an iron core produced using the same. The steel sheet comprises: a predetermined chemical composition; and a steel microstructure in which: crystal grains are made up of coarse secondary recrystallized grains of 5.0 mm or more, fine grains of more than 2.0 mm and less than 5.0 mm contained at a frequency of 0.2 to 5 grains per cm², and very fine grains of 2.0 mm or less; for each coarse secondary recrystallized grain extending through the sheet in a thickness direction, an area ratio of a region in which projected surfaces of exposed areas of the coarse secondary recrystallized grain on a front side and a back side of the sheet coincide with each other to each of the exposed areas is 95 % or more.

IPC 8 full level

C21D 8/12 (2006.01); **C21D 6/00** (2006.01); **C21D 9/46** (2006.01); **C22C 38/00** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/08** (2006.01); **C22C 38/12** (2006.01); **C22C 38/16** (2006.01); **C22C 38/20** (2006.01); **C22C 38/22** (2006.01); **C22C 38/34** (2006.01); **C22C 38/42** (2006.01); **C22C 38/48** (2006.01); **C22C 38/60** (2006.01); **H01F 1/147** (2006.01)

CPC (source: EP KR US)

C21D 6/008 (2013.01 - EP); **C21D 8/005** (2013.01 - EP); **C21D 8/12** (2013.01 - KR); **C21D 8/1222** (2013.01 - US); **C21D 8/1233** (2013.01 - US); **C21D 8/1244** (2013.01 - EP); **C21D 8/1255** (2013.01 - US); **C21D 8/1272** (2013.01 - EP US); **C21D 9/46** (2013.01 - EP KR US); **C22C 38/002** (2013.01 - EP US); **C22C 38/004** (2013.01 - EP); **C22C 38/008** (2013.01 - EP KR US); **C22C 38/02** (2013.01 - EP KR US); **C22C 38/04** (2013.01 - EP US); **C22C 38/08** (2013.01 - EP); **C22C 38/12** (2013.01 - EP KR US); **C22C 38/16** (2013.01 - EP); **C22C 38/20** (2013.01 - EP); **C22C 38/22** (2013.01 - EP); **C22C 38/34** (2013.01 - EP); **C22C 38/42** (2013.01 - EP KR US); **C22C 38/48** (2013.01 - EP KR US); **C22C 38/60** (2013.01 - EP US); **H01F 1/147** (2013.01 - KR); **H01F 1/16** (2013.01 - EP); **C21D 1/76** (2013.01 - EP); **C21D 3/04** (2013.01 - EP); **C21D 2201/05** (2013.01 - EP US)

Citation (search report)

- [A] JP 4106815 B2 20080625
- [A] EP 0716151 A1 19960612 - KAWASAKI STEEL CO [JP]
- [A] WO 2018207873 A1 20181115 - JFE STEEL CORP [JP]
- [A] EP 0837149 A2 19980422 - KAWASAKI STEEL CO [JP]
- [A] EP 1273673 A1 20030108 - KAWASAKI STEEL CO [JP]
- [A] WO 2018117639 A1 20180628 - POSCO [KR]
- [A] JP H07268567 A 19951017 - NIPPON STEEL CORP
- See also references of WO 2020158893A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

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DOCDB simple family (publication)

EP 3919636 A1 20211208; **EP 3919636 A4 20220323**; CN 113366125 A 20210907; CN 113366125 B 20230120; JP 6813134 B2 20210113; JP WO2020158893 A1 20210218; KR 102504894 B1 20230228; KR 20210107833 A 20210901; US 11959149 B2 20240416; US 2022098697 A1 20220331; WO 2020158893 A1 20200806

DOCDB simple family (application)

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